FAQ's

1. **What are the requirements of good water distribution system?**
   - Water quality should not get deteriorated in the distribution pipes.
   - It should be capable of supplying water at all the intended places with sufficient pressure head.
   - It should be capable of supplying the requisite amount of water during firefighting.
   - The layout should be such that no consumer would be without water supply, during the repair of any section of the system.
   - All the distribution pipes should be preferably laid one metre away or above the sewer lines.
   - It should be fairly water-tight as to keep losses due to leakage to the minimum.
   - Able to withstand UV effects
2. **What are the various water distribution layouts for a neighborhood?**

   There are, in general, four different types of pipe networks; any one of which either singly or in combinations, can be used for a particular place. They are: Grid, Ring, Radial and Dead End System.

3. **What does a water supply system for a building consist of?**

   A water supply system or water supply network is a system of engineered hydrologic and hydraulic components which provide water supply. A water supply system typically includes:

   - A drainage basin (source of drinking water).
   - A raw water collection point (above or below ground) where the water accumulates, such as a lake, a river, or groundwater from an underground aquifer. Raw water may be transferred using uncovered ground-level aqueducts, covered tunnels or underground water pipes to water purification facilities.
   - Water purification facilities. Treated water is transferred using water pipes (usually underground).

- Water storage facilities such as reservoirs, water tanks, or water towers. Smaller water systems may store the water in cisterns or pressure vessels. Tall buildings may also need to store water locally in pressure vessels in order for the water to reach the upper floors.
- Additional water pressurizing components such as pumping stations may need to be situated at the outlet of underground or above ground reservoirs or cisterns (if gravity flow is impractical).
- A pipe network for distribution of water to the consumers (which may be private houses or industrial, commercial or institution establishments) and other usage points (such as fire hydrants).
- Connections to the sewers (underground pipes, or aboveground ditches in some developing countries) are generally found downstream of the water consumers, but the sewer system is considered to be a separate system, rather than part of the water supply system.

4. **What are the design principles of layout of water supply distribution within a building?**

The layout maybe basically horizontal or vertical arrangement of limited height and in which underground mains under pressure supply water to the fixture inlets. Water is first collected in the underground tank and then it is pumped to elevated storage tanks and feed the fixtures by gravity. Sometimes, the fixtures are directly feed from underground tanks called the direct supply system.

- The pipe lines layout should be so laid that there is no risk of contaminating the water supply.
- There is no cross-connection anywhere between a pipe carrying portable water and the pipe carrying waste water.
- There should not be any backflow from any sanitary appliances towards the source of supply
- Water supply pipes and waste water lines should not be laid very close to each other.
- The pipe line should be properly protected against damage.
- The pipelines should be laid out as straight as possible to maintain adequate pressure.

5. What are the design principles of layout of drainage system within a building?

The following requirements are suggested to beconsidered in the design of drainage system:

- The layout shall be as simple and direct aspracticable.
- The pipes should be laid in straight lines, asfar as possible, in both vertical and horizontalplanes.
- Anything that is likely to cause irregularityof flow, as abrupt changes of direction, shallbe avoided.
- The pipes should be non-absorbent, durable,smooth in bore and of adequate strength.
- The pipes should be adequately supportedwithout restricting movement.
- Drains should be well ventilated, to preventthe accumulation of foul gases and fluctuationof air pressure within the pipe, which couldlead to unsealing of gully or water-closet traps.
- All the parts of the drainage system shouldbe accessible for feasibility of inspection andpractical maintenance.
- No bends and junctions whatsoever shall bepermitted in sewers except at manholes andinspection chwbers.
- Sewer drain shall be laid for self-cleaningvelocity of 0.75,m/s and generally should notflow more than half-full.
- Pipes crossing in walls and floors shall bethrough mild steel sleeves of diameter leavingan annular space of 5 mm around the outerdiameter of the pipe crossing the wall.
- Pipes should not be laid close to buildingfoundation.
- Pipes should not pass near large trees becauseof possibility of damage by the roots.
- Branch connections should be swept in thedirection of flow.
- Sewer pipes should be at least 900 mm belowroad and at least 600 mm below fields andgardens.
- Pipes should not pass under a building unlessabsolutely necessary.